EN Classification for Welding Consumables

By TDC Consumables

Various EN Standards

EN ISO 2560 : Non alloy & fine Grain Steels for MMAW

EN ISO 3580 : Creep resistant steels for MMAW

EN ISO 3581 : SS for MMAW

EN ISO 21952 : Low alloy for GMAW

EN ISO 14341 : Non alloy & fine Grain Steels for GMAW

EN ISO 14343 : SS for GMAW

EN ISO 17632 : Non alloy & fine Grain Steels for FCAW

EN ISO 17633 : SS for FCAW

All EN standards are divided in two classes indicated by symbol :

- **A** **(For Ex. EN ISO 2560-A)**
- **B** **(For Ex. EN ISO 2560-B)**

– A :

Classification by **Yield Strength** and **47 J** impact energy

– B :

Classification by **Tensile Strength** and **27 J** impact energy

ador WELDING

ISO 2560

Covered Electrodes for manual metal arc welding of non-alloy and fine grain steels

ador WELDING

EN ISO 2560-A E 46 3 1Ni B 5 3 H5

Symbol	Minimum yield strength[a] MPa
35	355
38	380
42	420
46	460
50	500

Alloy symbol	Chemical con % (by mas Mn	Mo
No symbol	2,0	—
Mo	1,4	0,3 to 0
MnMo	1,4 to 2,0	0,3 to 0
1Ni	1,4	—

Symbol	Nominal electrode efficiency, η, %	Type of current[ab]
1	$\eta \leqslant 105$	a.c. and d.c.

iffusible ydrogen Content

Symbol	Diffusible hydrogen content max. ml/100 g of deposited weld metal
H5	5
H10	10
H15	15

E 46 4 1Ni B 3 2 H5

Cover Electr / MM

Symbol	Temperature for minimum av impact energy of 47 J °C
Z	No requirement
A	+20
0	0
2	–20
3	–30
4	–40
5	–50
6	–60

Symbol	Type of
A	Acid c
C	Cellulosic
R	Rutile c
RR	Rutile thic
RC	Rutile-cellulc
RA	Rutile-aci
RB	Rutile-basi
B	Basic c

Symbol	Welding positions [a]
1	PA, PB, PD, PF, PG
2	PA, PB, PD, PF
3	PA, PB
4	PA
5	PA, PB, PG

[a] Positions are defined in ISO 6947.

PA = Flat position

PB = Horizontal vertical position

PD = Horizontal overhead position

PF = Vertical up position

PG = Vertical down position

AWS SFA 5.1	EN ISO 2560-A
E7018	E 42 3 B 32 H5

AWS SFA 5.5	EN ISO 2560-A
E8018-C3	E 46 4 1Ni B 32 H5

AWS SFA 5.5	EN ISO 3580-A
E9018-B3	E CrMo2 B 32 H5

ISO 3581

Covered Electrodes for manual metal arc welding of stainless and heat-resisting steels

EN ISO 3581-A E 19 12 3 L R 1 2

Chemical Composition of All Weld Metal

Symbol classification by		Chemical composition [a, b] %							
nominal composition[c,d,e] (ISO 3581-A)	alloy type[e,f] (ISO 3581-B)	C	Si	Mn	P	S	Cr	Ni	Mo
19 12 3 L	(316L)	0,04	1,2	2,0	0,030	0,025	17,0 to 20,0	10,0 to 13,0	2,5 t 3,0

Symbol	Nominal electrode efficiency, η, %	Type of current[ab]
1	$\eta \leqslant 105$	a.c. and d.c.
2	$\eta \leqslant 105$	d.c.
3	$105 < \eta \leqslant 125$	a.c. and d.c.
4	$105 < \eta \leqslant 125$	d.c.
5	$125 < \eta \leqslant 160$	a.c. and d.c.
6	$125 < \eta \leqslant 160$	d.c.
7	$\eta > 160$	a.c. and d.c.
8	$\eta > 160$	d.c.

E 19 12 3 L R 1 2

Covered Electrode / MMAW

Symbol	
A	
C	
R	
RR	
RC	R
RA	
RB	
B	

Symbol	Welding positions [a]
1	PA, PB, PD, PF, PG
2	PA, PB, PD, PF
3	PA, PB
4	PA
5	PA, PB, PG

[a] Positions are defined in ISO 6947.

PA = Flat position

PB = Horizontal vertical position

PD = Horizontal overhead position

PF = Vertical up position

PG = Vertical down position

AWS SFA 5.4	EN ISO 3581-A
E308L-15	E 19 9 L B 22

AWS SFA 5.4	EN ISO 3581-A
E308L-16	E 19 9 L R 12

AWS SFA 5.4	EN ISO 3581-A
E2209-16	E 22 9 3 N L R 22

ador WELDING

ISO 14341

Wire electrodes and weld deposits for gas shielded metal arc welding of non-alloy and fine grain steels

EN ISO 14341-A G 46 3 M21 3Si1

Symbol	Minimum yield strength[a] MPa	Tensile strength MPa	Minimum elongation[b] %
35	355	440 to 570	22
38	380	470 to 600	20
42			
46			
50			

Symbol		Components in nomin		
Main group	Sub-group	Oxidizing		I
		CO_2	O_2	Ar
I	1			100
	2			
	3			balance
M1	1	$0,5 \leqslant CO_2 \leqslant 5$		balance [a]

Symbol	Chemical composition, % (by mass) [a]											
	C	Si	Mn	P	S	Ni	Cr	Mo	V	Cu	Al	Ti + Zr
2Si	0,06 to 0,14	0,50 to 0,80	0,90 to 1,30	0,025	0,025	0,15	0,15	0,15	0,03	0,35	0,02	0,15
3Si1	0,06 to 0,14	0,70 to 1,00	1,30 to 1,60	0,025	0,025	0,15	0,15	0,15	0,03	0,35	0,02	0,15

G **46** **3** **M21** **3Si1**

Wire Electrode or product process

Symbol	Temperature for minimum average impact energy of 47 J °C
Z	No requirement
A	+20
0	0
2	–20
3	–30
4	–40
5	–50
6	–60

Chemical Composition of Wire Electrode

ador WELDING

AWS SFA 5.18	EN ISO 14341-A
ER70S-6	G 46 3 M21 3Si1

AWS SFA 5.18	EN ISO 636-A
ER70S-6	W 42 5 W3Si1

AWS SFA 5.28	EN ISO 21952-A
ER80S-B2	G CrMo1Si

AWS SFA 5.28	EN ISO 14341-A
ER80S-D2	G 46 3 C G4Mo

AWS SFA 5.9	EN ISO 14343-A
ER308L	W 19 9 L

ador WELDING

ISO 17632

Tubular cored electrodes for gas shielded and non gas shielded metal arc welding of non-alloy and fine grain steels

EN ISO 17632-A T 42 2 R C/M 2 H8

Symbol	Minimum yield strength[a] MPa	Tens stren MP
35	355	440 to
38	380	470 to
42	420	500 to
46	460	530 to
50	500	560 to

Symbol	Characteristics	Types of weld	Shielding gas
R	Rutile, slow-freezing slag	Single and multiple pass	Required
P	Rutile, fast-freezing slag	Single and multiple pass	Required
B	Basic	Single and multiple pass	Required

; Gas

Diffusible Hydrogen Content

T 42 2 R C/M 2 H8

Symbol	Temperature for minimum average impact energy of 47 J °C
Z	No requirement
A	+20
0	0
2	–20
3	–30
4	–40
5	–50
6	–60

Tubular (
Electro

Welding Position

AWS SFA 5.20	EN ISO 17632-A
E71T-1C/M H8	T 42 2 R C/M 2 H8

AWS SFA 5.20	EN ISO 17632-A
E71T-5C/M H4	T 42 3 B C/M 2 H5

AWS SFA 5.29	EN ISO 18276-A
E110T5-K4C H4	T 62 5 Mn2NiCrMo B C 4 H5

AWS SFA 5.22	EN ISO 17633-A
E316LT1-1/4	T 19 12 3 L R C/M 2

Thank You !